

# MORTALITY OF COOTS DURING SEVERE SPRING WEATHER<sup>1</sup>

LEIGH H. FREDRICKSON

AMERICAN Coots (*Fulica americana*) suffered extensive mortality in Iowa during severe spring weather in 1964. On 5 March, coots were first sighted on Little Wall Lake near Jewell (Hamilton County) after a period of warm weather freed the lakes of ice. No accurate counts were made of coot numbers, but thousands were present in central Iowa by 25 March when the minimum temperature suddenly dropped to about 10° F for six days (U.S. Weather Bureau, Climatological Data, Iowa Section 75:224, 1964). Many lakes refroze and hundreds of coots on Little Wall Lake and other Iowa marshes died during the cold weather. The first indication of extensive coot mortality on Little Wall Lake was encountered 30 March when large numbers of dead birds were found along the edge of the small area of open water. Some were frozen in the ice, others were dead on shore, and several weakened birds could not fly. On 31 March and 1 April, 235 dead coots were collected and placed in a freezer at Iowa State University. Similar mortality of coots and Anatidae was reported on several lakes in northern Iowa, and 64 coots were collected from Trumbull Lake in Clay County by Glenn Jones of the Iowa State Conservation Commission.

Coots were stored in a freezer until examined. Birds were weighed to the nearest gram. Breast contours were classified (from drawings) in three categories: rounded, v-shaped, or sharp. The gizzard was removed and opened, and the presence of food, lead shot, and grit was recorded.

## RESULTS

Frequency distribution of weights of coots collected during the die-off is shown in Fig. 1. The mean weight of male birds was 419 grams, compared with a mean of 341 grams for females (Table 1). Although coots were not collected in a normal spring for a comparison of body condition, weight data are presented on 47 coots taken during the 1964 waterfowl hunting season. Weights in the fall were nearly twice the weight of birds collected during the spring die-off. The extreme difference in weight was indicative of the emaciated condition of the ice-trapped coots. There appear to be no data in the literature on weights of coots in spring, but winter weights taken in California by Gullion (J. Wildl. Mgmt. 7:191-197, 1943) are similar to weights of birds collected in the fall in Iowa. In California, the mean weight of coots in winter was 598 grams (range = 379-666) for females and 706 grams (range = 567-829) for males.

<sup>1</sup> Journal Paper No. J-5860 of the Iowa Agriculture and Home Economics Experiment Station, Ames, Iowa. Project 1504.

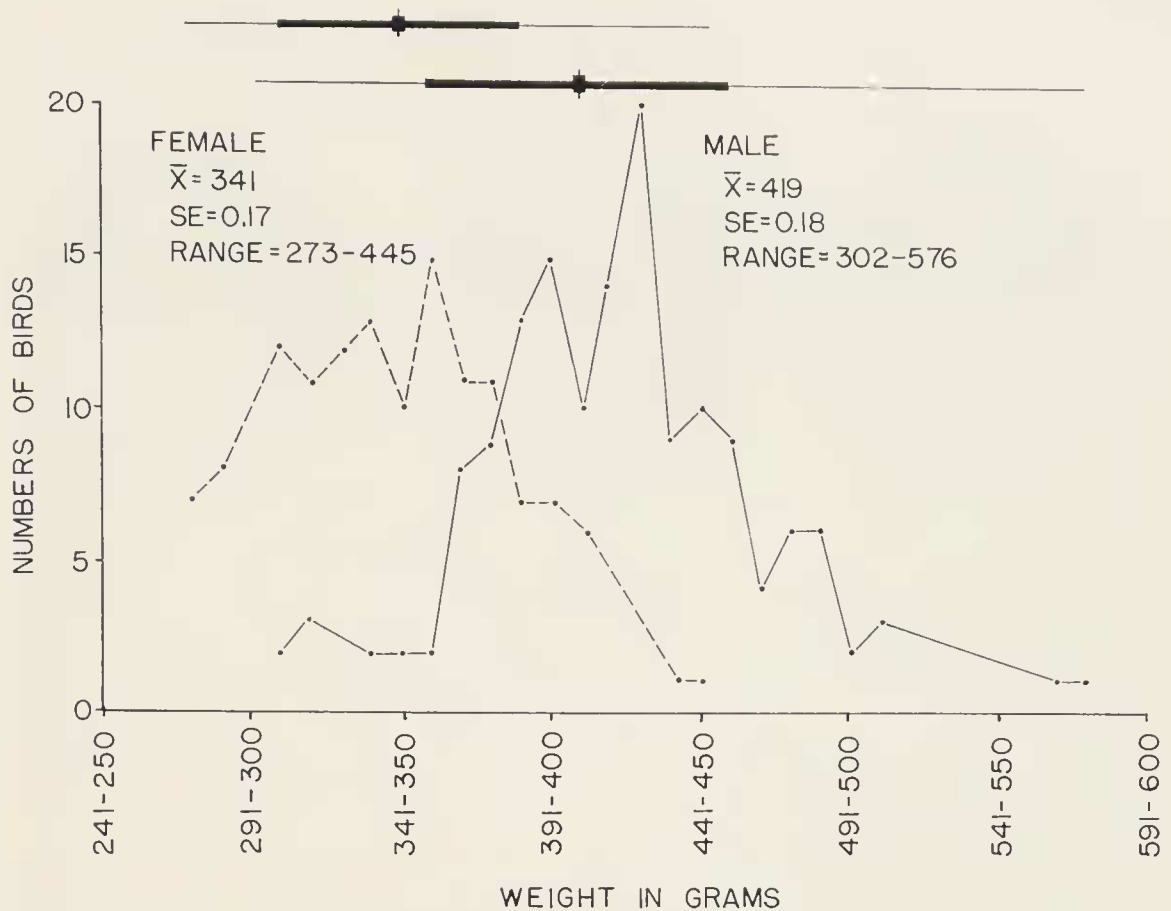


FIG. 1. Frequency distribution of weights of American Coots which died during severe weather, based on 141 females and 150 males.

Only 10 per cent of 293 coots collected during the spring die-off in Iowa had rounded breast contours (Fig. 2). Thirty-one per cent of coots of both sexes had v-shaped contours. The remaining 59 per cent of the birds had a sharp contour suggestive of utilization of breast muscle, indicating that over half were suffering from severe starvation. On the basis of breast

TABLE I

COMPARISONS OF AVERAGE WEIGHTS (GRAMS) OF COOTS OF BOTH SEXES THAT DIED DURING ADVERSE WEATHER IN SPRING WITH THOSE COLLECTED DURING THE FALL WATERFOWL SEASON  
 (Ranges are shown in parentheses)

	Spring		Fall	
	139 Males	149 Females	27 Males	20 Females
Weight	419* (302-576)	341 (273-445)	725 (576-848)	560 (427-657)

\* Mean

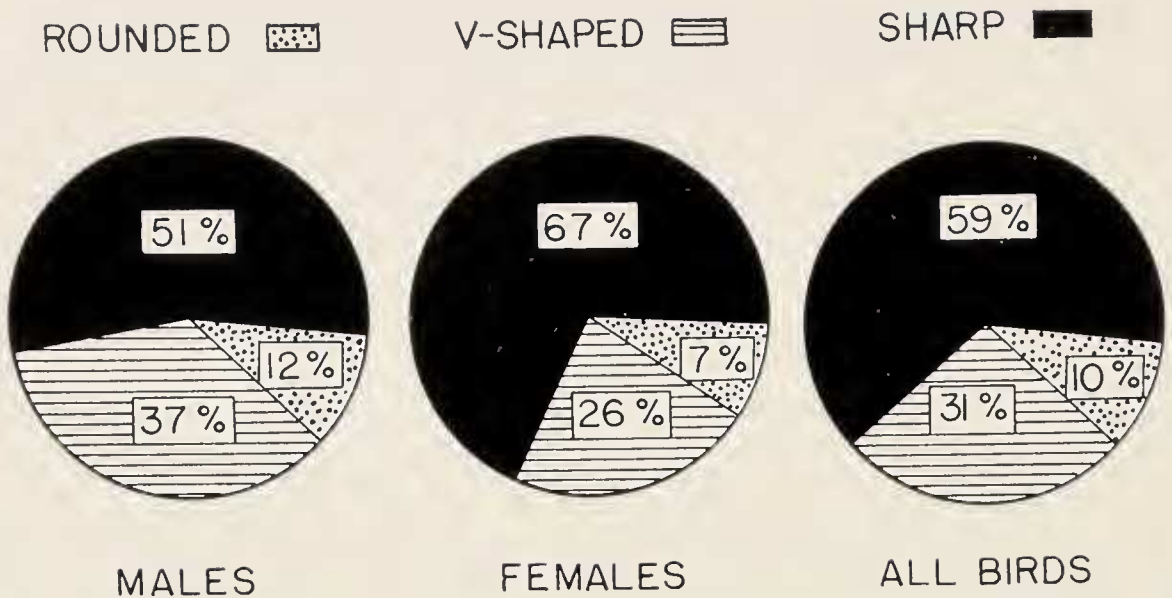


FIG. 2. Per cent of three types of breast contours found on 293 coots (141 females and 152 males) following a period of severe weather.

contours, females appeared more emaciated than males. Females had 16 per cent more sharp contours, 11 per cent fewer v-shaped contours, and five per cent fewer rounded contours.

On the average, male coots that died in the spring were 306 grams (42 per cent) lighter than those collected in fall. Females averaged 219 grams (39 per cent) lighter in spring than in fall. The sex ratio of the entire population in spring was unknown, but the sexes were almost equally represented among the dead birds (48 per cent males). Assuming that birds of both sexes arrived concurrently, they lost about the same percentage of body weight as they starved. However, as females apparently utilized a higher proportion of breast muscle than did males, the manner in which weight was lost differed by sex.

All gizzards contained grit, and all were free of lead shot, indicating that lead poisoning was not a factor in the die-off. Although 92 per cent of the gizzards contained some food, large quantities of food were never present. *Scirpus* seeds were found most commonly. No heavy helminth infestations were noted.

#### DISCUSSION

The high mortality experienced by coots during the abnormal period of freezing temperatures probably resulted from several factors. Coots in spring migration do not appear to return south to avoid adverse weather. Unseasonably cold temperatures refroze much of the water along the shallow shores, which restricted coots to feeding in deep water where submergent vegetation was scarce. Because of snow and cold, upland areas were devoid of grasses

normally used as food. In addition, the plumage of coots may not provide adequate protection during prolonged periods of cold weather. Although no information is available on heat loss in Rallidae, it seems possible that an unusually large caloric intake may be necessary for survival during severe weather. This combination of factors probably induced starvation and the severe mortality. This die-off provides an example of the climatic limitations that affect the evolution of the chronology of spring migration.

#### ACKNOWLEDGMENTS

Milton Weller and Frederick Vande Vusse assisted with field collections and laboratory examination. Many students at Iowa State University provided assistance throughout the study. Thomas Neal, Douglas Thompson, Dale Hein, David Roslien, Jerry Horak, and Gerald Kaufman deserve special thanks. Thomas Baskett and Milton Weller made helpful suggestions on the manuscript.

DEPARTMENT OF ZOOLOGY AND ENTOMOLOGY, IOWA STATE UNIVERSITY, AMES, IOWA. (PRESENT ADDRESS: GAYLORD MEMORIAL LABORATORY, UNIVERSITY OF MISSOURI, PUXICO, MISSOURI), 2 FEBRUARY 1968.

#### NEW LIFE MEMBER

Dr. Alice M. Briant, Emeritus Professor at Cornell University has recently become a Life Member of the Wilson Society. Dr. Briant holds degrees from McGill University and Cornell University. She is a member of Sigma Xi and Phi Kappa Phi. Her interests in ornithology have been those of a serious amateur student, and she has other hobbies in travel, and a variety of handcrafts.

